



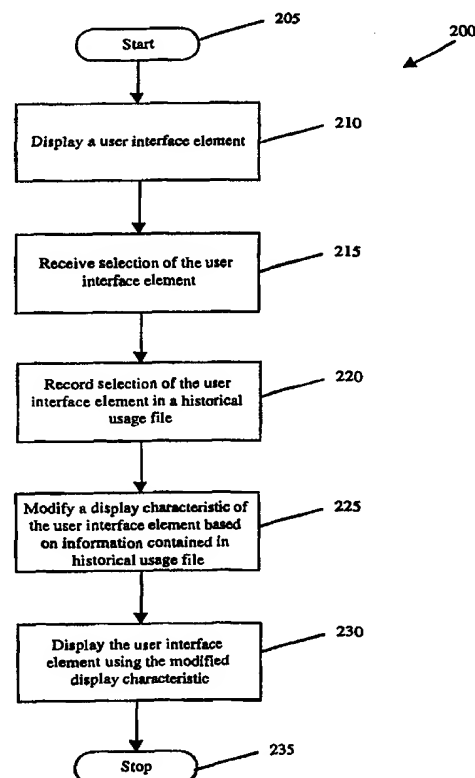
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>G06F 9/44</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/66394</b> <b>(43) International Publication Date:</b> 23 December 1999 (23.12.99)
<b>(21) International Application Number:</b> PCT/US99/12524 <b>(22) International Filing Date:</b> 4 June 1999 (04.06.99)  <b>(30) Priority Data:</b> 09/098,725                      17 June 1998 (17.06.98)                      US  <b>(71) Applicant:</b> MICROSOFT CORPORATION [US/US]; One Microsoft Way, Redmond, WA 98052 (US).  <b>(72) Inventors:</b> ARCURI, Michael, P.; 1110 18th Avenue, Seattle, WA 98122 (US). HACHAMOVITCH, Dean; 8520 Hunts Point Lane, Bellevue, WA 98004 (US). JOHNSON, JEFFREY, J.; 2436 158th Place, N.E., Bellevue, WA 98008 (US).  <b>(74) Agents:</b> PETTY, W., Scott et al.; Jones & Askew, LLP, 2400 Monarch Tower, 3424 Peachtree Road, N.E., Atlanta, GA 30326 (US).		<b>(81) Designated States:</b> JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>With amended claims.</i>  <b>Date of publication of the amended claims:</b> 10 February 2000 (10.02.00)

**(54) Title:** METHOD FOR ADAPTING USER INTERFACE ELEMENTS BASED ON HISTORICAL USAGE

**(57) Abstract**

Adapting user interface elements based on historical usage. A user interface element is displayed in a menu. In response to receiving an indication of the selection of the user interface element, the selection is stored in a historical usage file that maintains usage information associated with the selected user interface element. Usage information includes, but is not limited to, frequency, most recently used and recency information. The display characteristic of the user interface element can be modified based on the usage information stored in the historical usage file for the selected user interface element. The display characteristics include, but are not limited to, character size, font type, style, graphic. The selected user interface element is then displayed using the modified display characteristic.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

## AMENDED CLAIMS

[received by the International Bureau on 17 December 1999 (17.12.99);  
original claims 1-15 replaced by new claims 1-13 (4 pages)]

- 5           1.     In a computer system running a program module comprising  
a user interface environment, a method for modifying a user interface  
element for a user interface of the program module in response to usage  
information, comprising the steps of:
- receiving a selection of the user interface element having a display  
10   characteristic;
- storing the selection of the user interface element in a historical  
usage file for maintaining usage information regarding the user interface  
element;
- modifying the display characteristic of the user interface element  
15   based on the usage information contained in the historical usage file;
- displaying the user interface element using the modified display  
characteristic; and
- modifying the user interface environment, such that positioning a  
cursor proximate to the user interface element creates an attractive force  
20   between the user interface element and the cursor, wherein the strength of  
the attraction is based on the usage information contained in the historical  
usage file.

2. The method of Claim 1, wherein the step of modifying the display characteristics of the user interface element based on information contained in the historical usage file comprises the steps of:

- calculating a selection frequency of the user interface element; and
- 5 modifying the display characteristic of the user interface element based on the calculated selection frequency.

3. The method of Claim 1, wherein the step of modifying the user interface environment based on information contained in the historical usage file comprises:

- calculating a selection frequency of the user interface element; and
- modifying the strength of attractive force between the user interface element and the cursor based on the calculated selection frequency.

15

4. The method of Claim 2, wherein the step of calculating the selection frequency comprises the steps of:

- determining an average selection frequency value of multiple elements of the user interface, wherein the user interface element is one
- 20 of the multiple user interface elements;
- defining frequency groups; and
- assigning each of the multiple user interface elements to one of the frequency groups.

5. The method of Claim 1, wherein the step modifying the display characteristics of the user interface element based on information contained in the historical usage file comprises the steps of:

calculating a most recently used selection value for the user  
5 interface element; and

modifying the display characteristic of the user interface element based on the most recently used selection value.

6. The method of Claim 1, wherein the step of modifying the  
10 user interface environment based on information contained in the historical usage file comprises:

calculating a most recently used selection value for the user  
interface element; and

modifying the strength of the attractive force between the user  
15 interface element and the cursor based on the most recently used selection value.

7. The method of Claim 1 further comprising the step of storing the modified display characteristic, wherein the stored modified display  
20 characteristic is accessible for multiple session of the program module.

8. The method of Claim 1, wherein the usage information of the historical usage file compares information defining selection of the user interface element by multiple users.

9. The method of Claim 1, wherein the user interface element is a hyperlink contained in a web page.

5 10. The method of Claim 1, wherein the display characteristic comprises a font type.

11. The method of Claim 1, wherein the display characteristic comprises a font style.

10

12. The method of Claim 1, wherein the display characteristic comprises a character size.

13. The method of Claim 1, wherein the display characteristic  
15 comprises a graphic.